Weekly Summary

Economics of Climate Change

May 16, 2025

Deep dive in the EU automotive industry

Europe's automotive sector, the world's second-largest and accounting for over 3% of the EU's activity and employment, is facing a challenge to its business model. It must continue to advance towards decarbonization while navigating the reconfiguring of economic relationships between major blocs, with China dominating the electric mobility value chain and the US adopting a mercantilist approach to trade relations. Through its Action Plan—emphasizing innovation and competitiveness—the EU might preserve its status as a global auto leader, but only if it moves quickly to keep pace in a fiercely contested market.

The automotive sector remains one of the main pillars of the European economy, contributing significantly to GVA and employment. However, the industry is confronting a range of challenges that are reshaping its future, including pressures related to CO2 emissions, the digital transformation towards electric vehicles (EVs), and the intensification of international competition. This note offers a bird's aye view of the current state of the sector and the key dynamics influencing its trajectory.

China leads the global automotive industry, followed by the EU. On a global scale, China reigns as the undisputed leader in the automotive industry, accounting for over 30% of global vehicle production and demand. The EU holds a strong second position, contributing 15% to global vehicle production and 13% to demand (**Figures 1 and 2**).

Figure 1. **PRODUCTION OF VEHICLES (NACE 29*) BY REGION** (UNIT OF CARS BY REGION AS % OF THE TOTAL VEHICLE PRODUCTION)

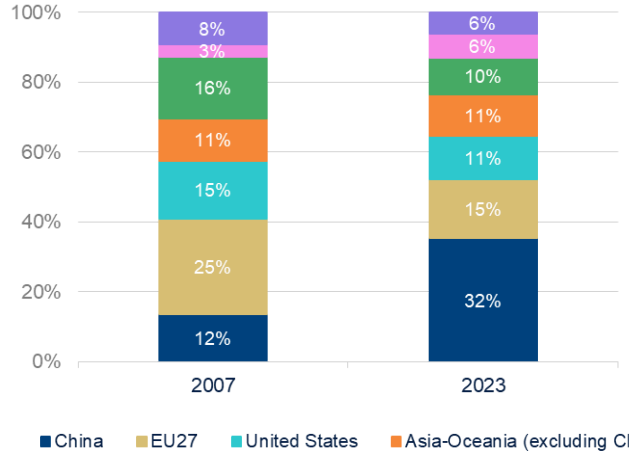
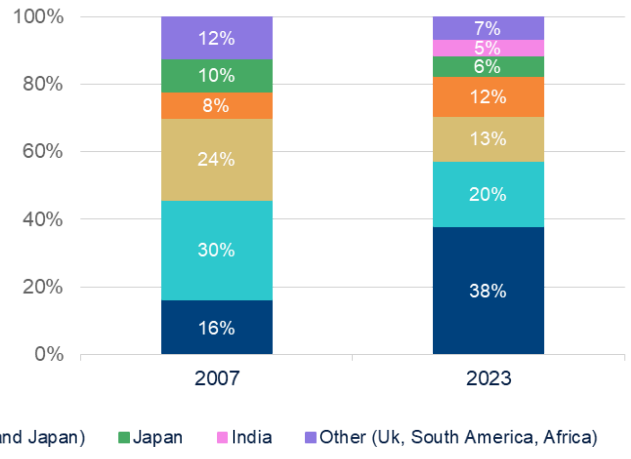


Figure 2. **SALES OF NEW VEHICLES (NACE 29) BY REGION** (UNIT OF CARS BY REGION AS % OF THE TOTAL NEW VEHICLE SALES)



China EU27 United States Asia-Oceania (excluding China,India and Japan) Japan India Other (Uk, South America, Africa)

Source: BBVA Research from OICA.*Passenger Cars, Commercial Vehicle, MiniBuses, Heavy Trucks, Buses and Coaches and Light Vehicles.

Boosting EU growth: How the automotive industry has increased in value and efficiency. The EU industry's gross value added (GVA)—including trade and repair—has steadily climbed throughout this century, only dipping

during economic slowdowns. By 2022, it made up 12% of the total value generated by EU manufacturing (**Figure 3**). The automotive sector provides jobs for 6.5 million people, accounting for 3% of all employment across the EU, and its productivity has grown hand in hand with its GVA (**Figure 4**), underscoring how the car industry has managed not only to expand but also to become more efficient.

Figure 3. **EU 27 GVA MANUFACTURING AUTOMOTIVE SECTOR (NACE 29)** (% OF EU 27 GVA MANUFACTURING SECTOR, VOLUME PRICES 2005)

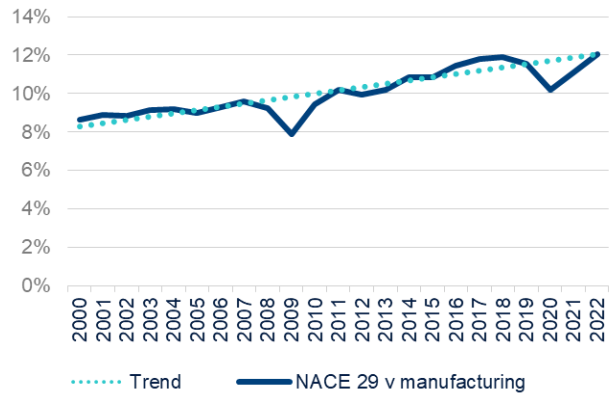
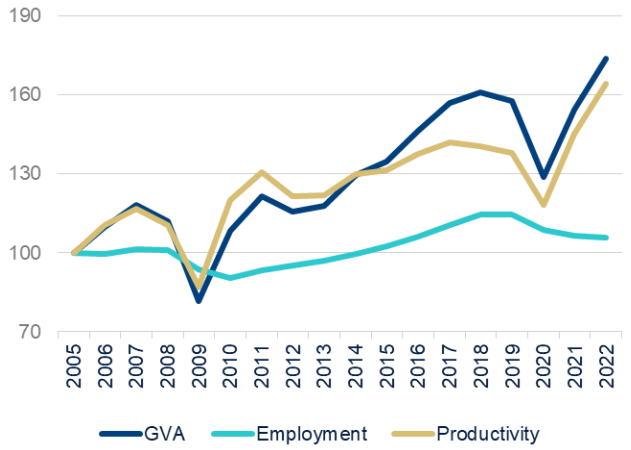


Figure 4. **GVA, EMPLOYMENT AND PRODUCTIVITY* IN EU27 MANUFACTURING AUTOMOTIVE SECTOR (NACE 29)** (2005=100)



Source: BBVA Research from Eurostat. (*) Productivity is calculated as the ratio between GVA and employment.

Germany leads by far the EU automotive sector, with 60% of GVA and 35% of jobs. Within the EU, Germany contributes almost 60% of the total sector's GVA**.** Trailing significantly are Spain, Italy and the Czechia, which -alongside Sweden, Poland, France and Romania- collectively account for one third of the EU sector's total GVA (**Figure 5**). **Employment, by contrast, is more evenly distributed**: Germany provides 35% of automotive jobs, followed by Poland at 12%, and Czechia and Romania accounting for 8% each. Italy, Spain and France together concentrate 17% of the industry's workforce (**Figure 6**).

Figure 5. **EU COUNTRIES. AUTOMOTIVE INDUSTRY GVA. 2022 VS 2007.** SHARE BY COUNTRY %

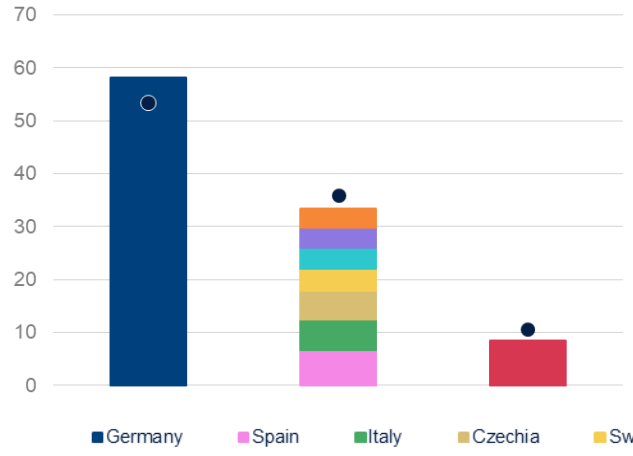
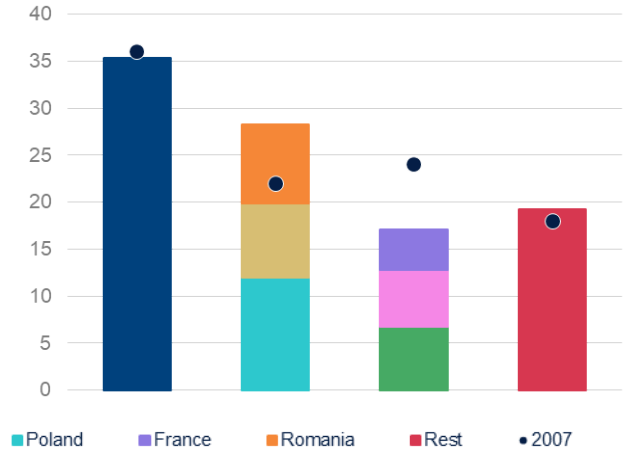


Figure 6. **EU COUNTRIES. AUTOMOTIVE INDUSTRY EMPLOYMENT.** 2022 VS 2007. SHARE BY COUNTRY %



Source: BBVA Research based on data from Eurostat.

The automotive sector generates a significant external surplus for the EU (0.5% of GDP) thanks to some of the world's most competitive manufacturers and their global exports of vehicles and technologies. **Germany overwhelmingly leads the EU car exports,** followed by Spain, Italy, Sweden, Czechia and France (**Figure 7**). The key markets for EU car exports are the US, UK, and China. The US primarily imports cars from Italy and Sweden, while China imports them from Germany. **EU car imports are more diversified across both suppliers and destinations, with China as the primary source of European imports.** In 2024, China retained its position as the EU's leading source of new vehicles by value—accounting for 17% of imports—with Spain as its principal recipient, followed by imports from the UK, Japan, and Türkiye.

Figure 7. **EU VEHICLES EXPORTS BY ORIGIN AND DESTINATION. 2023** (€ THOUSANDS MILLION, %)

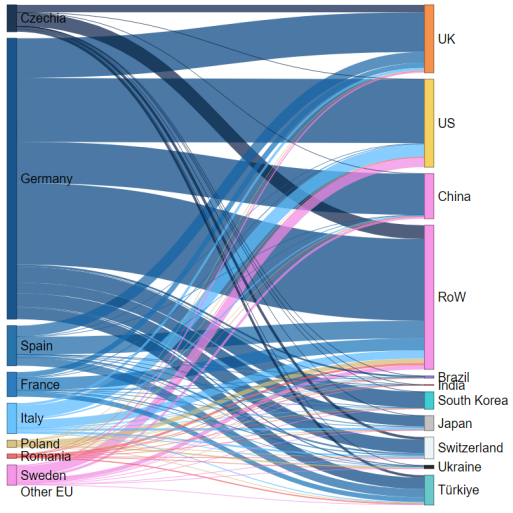
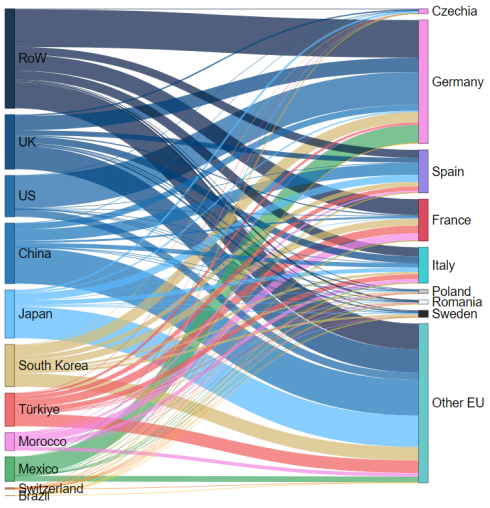


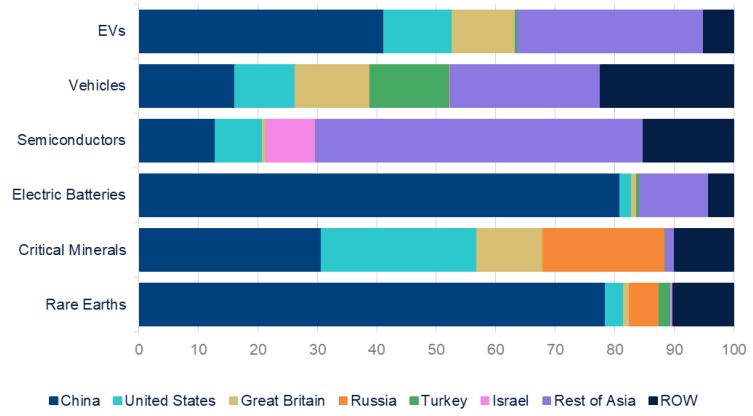
Figure 8. **EU VEHICLES IMPORTS BY ORIGIN AND DESTINATION. 2023** (€ THOUSANDS MILLION, %)



Source: BBVA Research based on data from Eurostat.

However, the automotive sector faces a challenging environment, with increasingly intense global competition led by China. EU car exports now have higher import content due to greater reliance on external suppliers like China and the US, along with the shift to electric vehicles (EVs), which is promoting vertical integration. **China is rapidly gaining market share in the EU for Battery Electric & Plug-In Hybrid Electric vehicles** (BEVs and PHEVs), becoming the leading foreign supplier of EVs, batteries and rare earths. Chinese BEVs are now cheaper than combustion vehicles in the small car segment and dominate the battery supply chain (**Figure 9**).

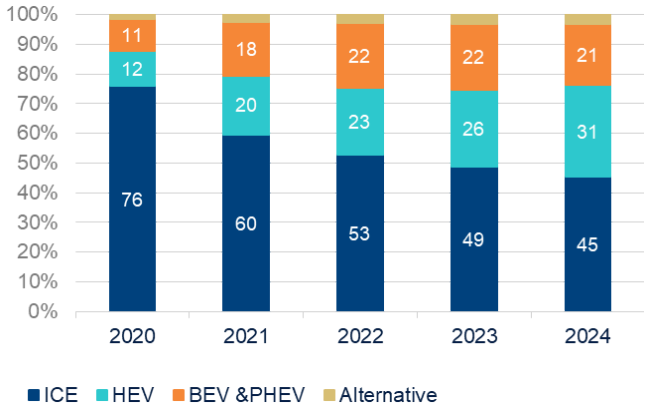
Figure 9. **EXTRA-EU EU IMPORTS BY PARTNERS AND PRODUCTS. 2023**



Source: BBVA Research from UN Comtrade data.

The electric vehicle sector has seen progress but still faces significant hurdles. In the EU, the share of new EVs in total sales has plateaued at around 21% (**Figure 10**). While the transition to EVs is driven by regulatory pressure to reduce emissions and the increasing need for sustainability, several key factors continue to hinder more rapid adoption: i) **High Purchase Prices**: EVs are still significantly more expensive than internal combustion engine vehicles, limiting their accessibility; ii) **Insufficient Charging Infrastructure**: A lack of widespread and accessible charging stations remains a critical barrier, particularly in rural or less-developed regions; and iii) **Income Dependency**: A strong correlation exists between EV penetration and GDP per capita, indicating that higher-income countries and consumers are more likely to adopt electric vehicles.

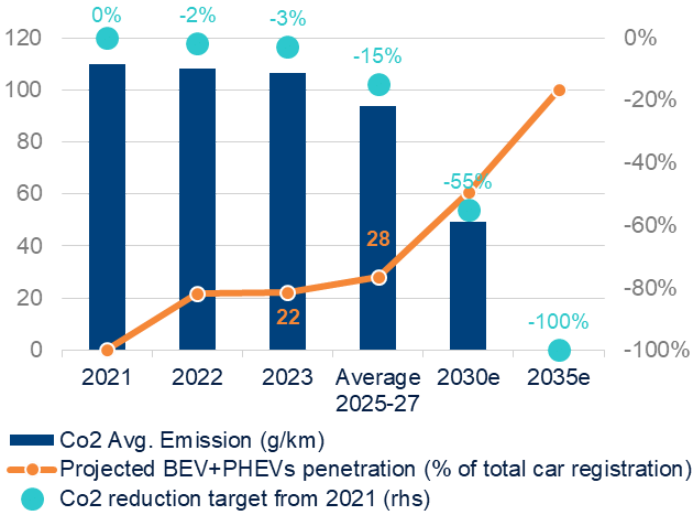
Figure 10. **EU TREND OF NEW PASSENGER CAR REGISTRATION BY TYPE OF MOTOR***
(% EU NEW CAR REGISTRATION)



*BEV & PHEV=Battery Electric & Plug-In Hybrid Electric; HEV= Hybrid Electric; ICE=Internal combustion engine Diesel & fuel; Alternative=LPG, natural gas (LNG or CNG), alcohols, hydrogen, bio-fuels (such as biodiesel), etc.
Source: Source: BBVA Research from Eurostat.

The EU is committed to reducing CO2 emissions from new cars by 100% by 2035, signaling a complete transition to zero-emission vehicles. However, the EU faces a significant challenge in meeting short-term emissions goals as EV adoption has slowed. In response, the European Commission EU has eased in April 2025 short-term CO2 reduction targets, extending the compliance period from 2025 to 2027, to support manufacturers and avoid penalties as its penetration in EV is delayed. Under the revised framework, newly registered vehicles must emit, on average, 15% less CO2 between 2025 and 2027 relative to 2021 levels. Our analysis suggests that to meet this revised benchmark, the combined market share of BEVs and PHEVs must rise from the current 21% to an average of 28% over the 2025–2027 period, reaching approximately 32% by 2027 (**Figure 11**). Crucially, beyond aggregate targets, the ability of European manufacturers to align with these goals is of paramount importance.

Figure 11. **CO2 EMISSION REDUCTION TARGETS FOR PASSENGER CARS**

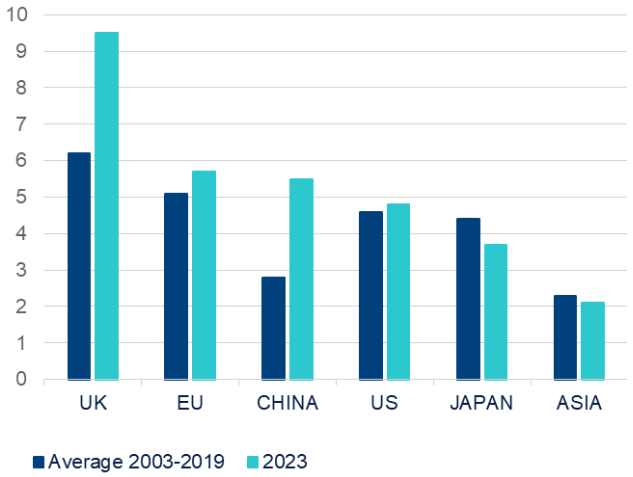


Considering a car 1,609.6 kg. and assuming emission of Co2: BEV 0, PHEV 35, 7, HEV 108 and ICE 136 g/km.
Source: BBVA Research, Haver and European Commission.

While the EU leads in automotive R&D investment, China is rapidly catching up, particularly in areas like autonomous driving, connectivity, and battery technologies (**Figure 12**). The EU's industrial ecosystem, however, still lacks the vertical integration seen in China's EV sector, placing the EU at a disadvantage in terms of efficiency and scalability in EV production.

Geopolitical tensions and trade barriers, particularly between the US and China, are reshaping global supply chains. The EU's growing reliance on China for battery components and electric vehicle manufacturing presents a strategic risk. As part of its response, the EU is actively working to diversify its supply chains to mitigate these risks. The rise of de-globalization and protectionist policies is forcing European automakers to rethink their reliance on external suppliers. Moreover, the costs associated with vertical reintegration of the industry in response to these geopolitical tensions and rising trade barriers are high, complicating the competitive landscape. Restrictions on the exchange of technology and data, particularly with China, are also hindering the development of critical technologies such as autonomous driving.

Figure 12. **AVERAGE R&D INTENSIVE RATIO IN THE AUTOMOTIVE SECTOR PER COMPANY** (% R&D TO NET SALES)



Source: BBVA Research based on EC Industrial R&D Investment Scoreboard (2003-2023).

In response to these challenges, the EU has unveiled a new Action Plan for the Automotive Sector (2025)[1], focusing on four key areas:

- **Clean Mobility**: Increasing the production of electric vehicles, improving charging infrastructure, and promoting sustainability.
- **Innovation and Digitalization**: Strengthening R&D for emerging technologies, particularly in autonomous driving and connectivity.
- **Supporting Workers**: Ensuring workforce training for new technologies and securing jobs within the sector.
- **Competitiveness and Supply Chain Resilience**: Protecting the automotive industry from unfair competition and attracting foreign investment to secure the supply chain.

[1]: Questions and answers on the Commission unveiling the Action Plan to drive innovation, sustainability, and competitiveness in the automotive sector. EC March 5, 2025.

All in all, the EU automotive sector stands at a crossroads. With China leading the charge in electric vehicle production and battery supply chains, the EU must accelerate its transition to electric vehicles, close the technological gap with China, and enhance its domestic production capacity. The success of this transformation will depend not only on the EU's ability to meet stringent CO2 emissions targets but also on its capacity to reconfigure supply chains in response to shifting geopolitical and trade dynamics. By implementing the Action Plan and focusing on innovation and competitiveness, the EU has the opportunity to remain a leader in the global automotive industry. However, it must act swiftly to avoid falling behind in an increasingly competitive and volatile global market.

Highlights of the Week

- **Global |** **More than 1 in 4 cars sold worldwide this year is set to be electric as EV sales continue to grow - News - IEA.** **14 May 2025.** Despite significant uncertainties, electric cars' market share is on course to exceed 40% by 2030 as they become increasingly affordable in more markets.

- **Europe |** **The Global Effects of Carbon Border Adjustment Mechanisms | NBER.** **April 2025**. CBAMs can effectively boost competitiveness, curb leakage, and encourage regulation, while also avoiding disproportionate impacts on lower-income countries.

- **Global |** **Towards more environmentally sustainable supply chains | OECD.** **9 May 2025.** Discussion on policy options for achieving environmentally sustainable supply chains by exploring how trade agreements interact with the broader governance ecosystem for environmental sustainability.

- **Global |** **Services trade and environmental sustainability | OECD.** **7 May 2025.** Services trade policy can contribute to addressing environmental challenges, synergies with environmental policy should be considered.

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